



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

|   |    |  |
|---|----|--|
| (51) International Patent Classification 6:<br>H04N 7/08, 7/16, 5/272 | A1 | (11) International Publication Number: WO 97/49239               |
|   |    | (43) International Publication Date: 24 December 1997 (24.12.97) |

(21) International Application Number: PCT/SE97/00872

(22) International Filing Date: 27 May 1997 (27.05.97)

(30) Priority Data:  
9602504-4 20 June 1996 (20.06.96) SE

(71) Applicant: TELIA AB [SE/SE]; Mårbackagatan 11, S-123 86 Farsta (SE).

(72) Inventors: MAGNUSSON, Peter; Blomstergatan 20, S-653 42 Karlstad (SE). BENGTSSON, Leif; Backvindeln 6, S-129 42 Hägersten (SE).

(74) Agent: KARLSSON, Berne; Telia Research AB, Rudsjötterrassen 2, S-136 80 Haninge (SE).

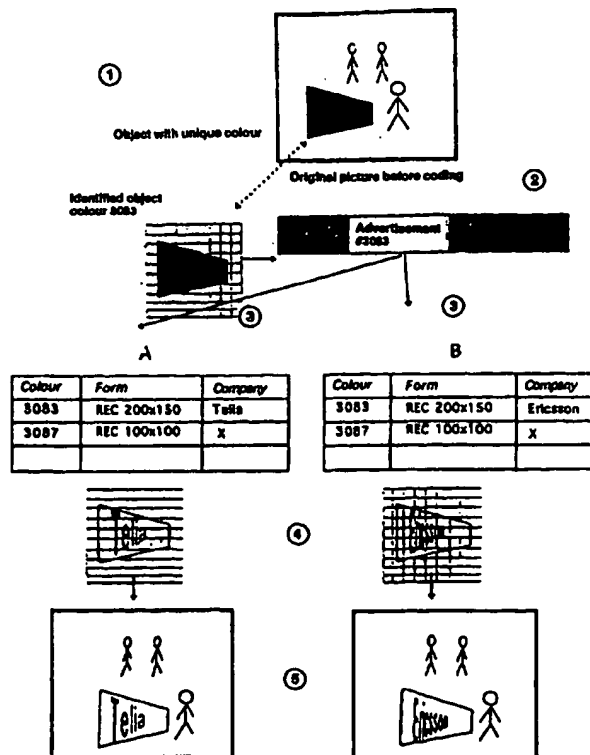
(81) Designated States: NO, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

Published  
With international search report.

(54) Title: INFORMATION AT TV-TRANSMISSION

## (57) Abstract

The invention relates to a method at digital TV which makes possible digital generated advertisement messages which are selected depending on existing receiver segment. The invention results in that one and the same advertisement display or corresponding picture surface can show different advertisement messages which are unique for different customer categories and which i.a. are based on which customer segment the owner of the decoder included in the system is registered to. In this way one and the same advertising space can be sold by the operator at one and the same point of time to a multiple of different advertisers. The invention applies to digital TV-transmission and is based on that one identifies different predefined objects in the image, such as for instance a display with a unique colour, in connection with the digital coding by identification of pattern, performed at the transmission of images. When a display has been identified at said coding, information is applied and the reference number of the advertisement that shall be presented, and how it shall be presented. When this information is received by the respective TV-viewer, a decoding is made in his/her decoder. When the information has been identified, the decoder makes a search in a table where it searches for the received reference number. In the table the original form of the advertisement display can be read and, depending on which customer segment the viewer belongs to, it also memorises which advertiser's advertisement shall be shown on the display.



**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

|    |                          |    |  |    |  |    |                          |
|----|--------------------------|----|--|----|--|----|--------------------------|
| AL | Albania                  | ES | Spain                                    | LS | Lesotho                                      | SI | Slovenia                 |
| AM | Armenia                  | FI | Finland                                  | LT | Lithuania                                    | SK | Slovakia                 |
| AT | Austria                  | FR | France                                   | LU | Luxembourg                                   | SN | Senegal                  |
| AU | Australia                | GA | Gabon                                    | LV | Latvia                                       | SZ | Swaziland                |
| AZ | Azerbaijan               | GB | United Kingdom                           | MC | Monaco                                       | TD | Chad                     |
| BA | Bosnia and Herzegovina   | GE | Georgia                                  | MD | Republic of Moldova                          | TG | Togo                     |
| BB | Barbados                 | GH | Ghana                                    | MG | Madagascar                                   | TJ | Tajikistan               |
| BE | Belgium                  | GN | Guinea                                   | MK | The former Yugoslav<br>Republic of Macedonia | TM | Turkmenistan             |
| BF | Burkina Faso             | GR | Greece                                   | ML | Mali   | TR | Turkey                   |
| BG | Bulgaria                 | HU | Hungary                                  | MN | Mongolia                                     | TT | Trinidad and Tobago      |
| BJ | Benin                    | IE | Ireland                                  | MR | Mauritania                                   | UA | Ukraine                  |
| BR | Brazil                   | IL | Israel                                   | MW | Malawi                                       | UG | Uganda                   |
| BY | Belarus                  | IS | Iceland                                  | MX | Mexico                                       | US | United States of America |
| CA | Canada                   | IT | Italy                                    | NE | Niger  | UZ | Uzbekistan               |
| CF | Central African Republic | JP | Japan                                    | NL | Netherlands                                  | VN | Viet Nam                 |
| CG | Congo                    | KE | Kenya                                    | NO | Norway                                       | YU | Yugoslavia               |
| CH | Switzerland              | KG | Kyrgyzstan                               | NZ | New Zealand                                  | ZW | Zimbabwe                 |
| CI | Côte d'Ivoire            | KP | Democratic People's<br>Republic of Korea | PL | Poland                                       |    |                          |
| CM | Cameroon                 | KR | Republic of Korea                        | PT | Portugal                                     |    |                          |
| CN | China                    | KZ | Kazakhstan                               | RO | Romania                                      |    |                          |
| CU | Cuba                     | LC | Saint Lucia                              | RU | Russian Federation                           |    |                          |
| CZ | Czech Republic           | LI | Liechtenstein                            | SD | Sudan  |    |                          |
| DE | Germany                  | LK | Sri Lanka                                | SE | Sweden                                       |    |                          |
| DK | Denmark                  | LR | Liberia                                  | SG | Singapore                                    |    |                          |
| EE | Estonia                  |    |  |    |  |    |                          |

## TITLE OF THE INVENTION: INFORMATION AT TV-TRANSMISSION

## FIELD OF THE INVENTION

5       The present invention relates to a method and a system for generation of digital information, adapted for different categories of customers, at digital TV-transmission.

## 10   PRIOR ART

      A problem which advertisers experience with the advertisement displaying in connection with TV today is that an advertisement displaying on a specific channel will be received by all TV-receivers, and consequently by all  
15   TV-viewers independent of which category of population these belong to.

      The aim with the present invention is to see to it that at live transmission of digital TV on a specific channel different advertising messages which are unique for  
20   different customer groups, and which have been selected for these customer groups, are generated on the basis of for instance demographical data.

      To find whether the previous technology describes and possibly solves above mentioned problem, a preliminary  
25   investigation was made at which the following documents were found.

      D1: US,A 5 231 494

      D2: US,A 5 319 455

      D3: EP,A2 424 648

30       D1 describes a device which compresses a number of TV-signals, such as a main program signal and a great number of demographically selected advertising messages. The great number of compressed TV-signals are combined to a combined signal for transmission on one single TV-channel. A TV-  
35   receiver which receives the combined signal identifies characteristics of a televised viewer, and selects a

specific TV-signal out of the compressed TV-signals from the received combined signal depending on the characteristics of the viewer.

5 D2 describes an interactive multimedia system with distributed processing of video image information in nodes arranged in a cable TV system. The nodes can be used to distribute customer adapted advertisement to a televised viewer.

10 D3 describes a method and a device to transmit demographically selected TV-advertisement. A first TV-channel includes TV-programs and periodical advertisement messages. A second TV-channel includes different advertisement messages. Demographical characteristics of a televised viewer is identified, and selected advertisement  
15 messages are transmitted to said viewer depending on the demographical characteristics of the viewers.

The above mentioned found documents consequently describe the principle of the present invention, i.e. to transmit different advertisement information to different  
20 customer groups based on, for instance, the demographical characteristics of the customer groups.

However, the present invention utilizes a quite new technology in relation to the presented documents at transmission, coding and interpretation of above mentioned  
25 advertisement information.

One more aim with the present invention consequently is to implement and utilize this new technology according to the present invention in digital TV.

### 30 SUMMARY OF THE INVENTION

The above mentioned aims are obtained by a method and a system which is indicated in the characterizing part of the patent claim 1 respective patent claim 10.

Other characteristics of the present invention are given  
35 in the subclaims.

**BRIEF DESCRIPTION OF THE DRAWING**

In the following a detailed description of an embodiment of the present invention is given with reference to the only drawing.

5       Figure 1 describes in principle the identification and coding of an advertisement object before transmission, and decoding and identification of advertisement object at a specific customer.

**10       DETAILED DESCRIPTION OF AN EMBODIMENT OF THE INVENTION**

The present invention relates to a system where advertisement is directed to certain groups of customers. Such a system makes possible that commercial advertising is adapted to a specific TV-viewer, at which an advertiser  
15       more effectively can use his/her advertisement budget. An advertiser can for instance during a live TV-program, or at a break for advertisement, provide different advertisement information which is shown selectively for different TV-viewers, depending on to which groups of population the TV-viewers belong. Groups of population can for instance be  
20       categorized on the basis of demographical data such as age, sex, social group etc.

The present invention now will be described with reference to Figure 1. The invention makes possible, as has  
25       been mentioned above, to at live transmission of digital TV generate digital advertisement messages which are unique for different categories of customers. This will imply that the same advertisement display or corresponding picture surface in the real not coded picture material shows  
30       different advertisement messages depending on to which customer category the owner of the decoder (the setup box) is registered. In this way one and the same advertisement place can be sold by an operator at one and the same point of time to a multiple of different advertisers. This  
35       transmitted advertisement however will not be presented to

all viewers, but only to the customer categories the advertisers have paid for.

The invention consequently is applicable to digital TV-transmissions (DVE). At digital TV-transmission an  
5 extensive digital image processing (coding) is made before the transmission of the image material, which primarily aims at compressing the content as much as possible in order to reduce the bandwidth at the transmission. The invention is based on that one in connection with this  
10 coding by means of recognition of pattern identifies different predefined objects in the picture, for instance a sign with a unique colour 1. It is in this case actually the colour that is identified at the coding. When a display or corresponding picture surface has been identified at the  
15 coding, the information about which reference number the advertisement that shall be presented shall have is applied, for instance 3083, and how this advertisement shall be presented 2.

When this information is received at respective TV-viewer then a decoding is made in his/her decoder,  
20 preferably a set-up box. When the information "Advertisement 3083" is identified, the decoder makes a search in a table 3 in its storage (memory) where it searches on the identification number 3083. In the table  
25 the original form of the advertisement display or corresponding surface of the picture can be read, and depending on which customer category the TV-viewer belongs to also is stored which advertiser's advertisement that shall be shown on the display or corresponding picture  
30 surface.

It can for instance be a rectangle with the measures 200 x 150 cm where for a TV-viewer, A, Telia's "advertisement display" shall be applied. In corresponding way a TV-viewer, B, will have Ericsson's advertisement applied in  
35 the image. On the basis of the identified object in the image storage (memory) and the original form, the

"advertisement display" can be transformed into the image storage 4. The viewers in this way will see different advertisement displays in their TV-receivers during the TV-transmission 5.

5       It should be realized that the decoder (the setup box) arranged at the TV-receiving equipment has a very important function since this decodes the received reference number, for instance "3083" by a search in a table. In this table the decoder reads the original form of the advertisement  
10       display or corresponding picture surface and, depending on which customer category the owner of the decoder belongs to, specific advertisement or information that shall be shown on display or corresponding image surface of the TV-receiver of said decoder.

15       The above mentioned is only to be regarded as an advantageous embodiment of present invention, och the scope of protection of the invention is only defined of what is indicated in the following patent claim.

## PATENT CLAIMS

1. Method for generation of different digital information messages which are adapted for different customer categories at digital TV-transmission, characterized in that it includes the steps:

5 a) that at a digital coding of image material which shall be transmitted, different predefined objects in said image material (1, 2) are identified by recognition of pattern, at which information based on said recognition of  
10 pattern about which reference number a message that shall be presented has, for instance "3083", and how this message shall be presented (3) is applied (added) to a code signal;

b) that said information in the code signal is received at respective TV-viewer and decoded in the decoder (3) of  
15 said TV-viewer;

c) that said decoder on the basis of said information makes a search in a table in its storage (memory) where it searches on the basis of received reference number, for instance "3083", at which the original form of said  
20 predefined object, corresponding to said reference number, for instance 3083, is read from said table and is read, depending on to which customer category said TV-viewer belongs, the message, for instance Ericsson, corresponding to said reference number, for instance 3083, which shall be  
25 presented on the image surface of the TV-viewer's TV-receiver and which corresponds to said predefined object;

d) that said message is transformed into an image storage (memory) (4) in said TV-receiver and is reproduced on the screen of the TV-receiver;

30 e) that said TV-viewers on their TV-receivers will see different messages depending on which customer category they belong to.

2. Method according to patent claim 1, characterized in that said predefined object  
35 consists of an advertisement display with a unique colour,

which colour is identified at said coding and is coded with a specific reference number.

3. Method according to patent claim 2,  
c h a r a c t e r i z e d in that said messages consists of  
5 an advertising message.

4. Method according to patent claim 3,  
c h a r a c t e r i z e d in that said TV-viewers are  
classified in different customer categories on the basis of  
demographical data.

10 5. Method according to any of the previous patent  
claims, c h a r a c t e r i z e d in that there in said  
decoder at each specific TV-viewer is information about to  
which customer category (A, B) said customer belongs.

6. Method according to any of the patent claims 2-5,  
15 c h a r a c t e r i z e d in that, on the basis of one for  
TV-viewer (A) specific advertising message, for instance  
Telia, and the original form of the predefined object, for  
instance REC 200 x 150, the advertising message can be  
transformed into said image storage (4) arranged in said  
20 TV-receiver.

7. Method according to any of the previous patent  
claims, c h a r a c t e r i z e d in that said decoder  
consists of a setup box.

8. Method according to any of the patent claims 2-7,  
25 c h a r a c t e r i z e d in that an operator provides said  
decoder and defines to which customer category a TV-viewer  
belongs, in cooperation with an advertising advertiser.

9. Method according to any of the patent claims 2-8,  
c h a r a c t e r i z e d in that said transmitted  
30 advertisement only is presented to the customer categories  
which said advertisers have paid for.

10. System for generation of different digital  
information messages which are adapted for different  
customer categories at digital TV-transmission,  
35 c h a r a c t e r i z e d in that said system includes an  
image coder arranged at a digital TV-transmission equipment

and at least one image decoder arranged at just any TV-receiver, at which said image coder is arranged, at a digital coding of image material which shall be transmitted, to identify different predefined objects in the image material (1, 2) by recognition of pattern, at which said image coder applies (adds) information based on said recognition of pattern in a code signal, which shall be transmitted, about which reference number a message that shall be presented has, and how this message shall be presented, and that said image decoder receives said code signal, at which said image decoder collects information regarding said reference number in the code signal and makes a search in a table in its storage for said reference number, for instance 3083, at which original form of said predefined object corresponding to said reference number is read from said table and, depending on to which customer category (A, B) said decoder belongs, the message, for instance Telia, Ericsson, is read, corresponding to said reference number, which shall be presented on the image surface of said TV-receiver which corresponds to said predefined object, at which said message, for instance Telia, Ericsson, corresponding to said reference number is transformed into an image storage (4) in said TV-receiver and is reproduced on a TV-sceen (5).

11. System according to patent claim 10, characterized in that said image coder identifies a colouring of said predefined object, which colouring is coded with a specific reference number, for instance 3083, 3087.

12. System according to any of the patent claims 10 or 11, characterized in that said image decoder at each specific TV-viewer provides information about to which customer category said TV-viewer belongs.

13. System according to any of the patent claims 10-12, characterized in that said table in said decoder in just wanted way can be updated of new advertisement

messages by an operator, and that said operator defines to which customer category a TV-viewer belongs by programming said decoder in a for different customer categories special way.

- 5      14. System according to any of the patent claims 10-13, characterized in that said image decoder is a set-up box.

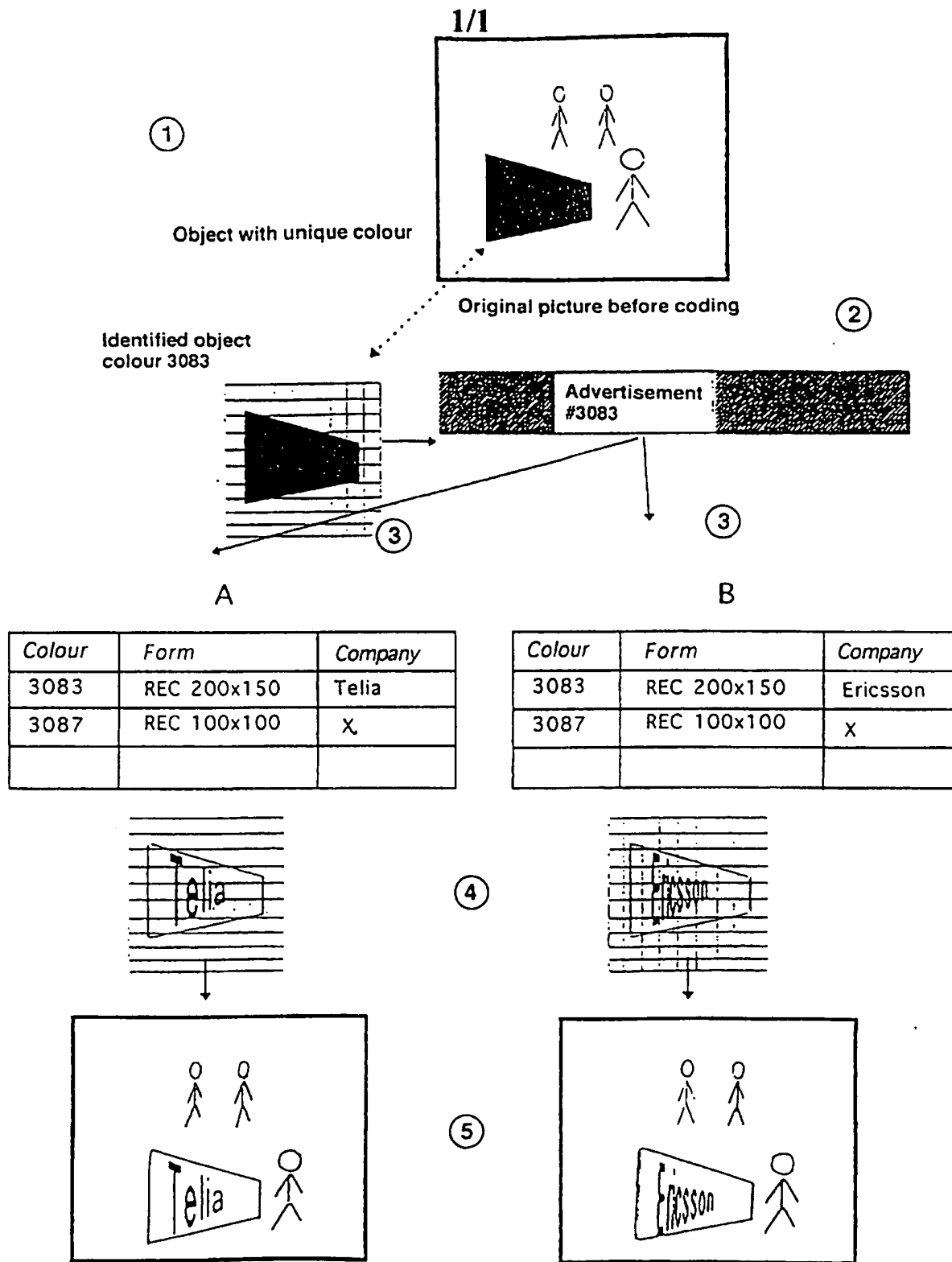


Figure 1

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 97/00872

| <b>A. CLASSIFICATION OF SUBJECT MATTER</b>  |   |   |
|---|---|---|
| IPC6: H04N 7/08, H04N 7/16, H04N 5/272<br>According to International Patent Classification (IPC) or to both national classification and IPC   |   |   |
| <b>B. FIELDS SEARCHED</b>   |   |   |
| Minimum documentation searched (classification system followed by classification symbols)   |   |   |
| IPC6: H04N  |   |   |
| Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched   |   |   |
| SE,DK,FI,NO classes as above  |   |   |
| Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  |   |   |
| <b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>   |   |   |
| Category*   | Citation of document, with indication, where appropriate, of the relevant passages                          | Relevant to claim No.   |
| A   | US 5231494 A (D.E. WACHOB), 27 July 1993<br>(27.07.93), cited in the application<br>--                      | 1-14  |
| A   | US 5319455 A (W.L. HOAARTY ET AL), 7 June 1994<br>(07.06.94), cited in the application<br>--                | 1-14  |
| A   | EP 0424648 A2 (GENERAL INSTRUMENT CORPORATION),<br>2 May 1991 (02.05.91), cited in the application<br>----- | 1-14  |
| <input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.  |   |   |
| * Special categories of cited documents:<br>"A" document defining the general state of the art which is not considered to be of particular relevance<br>"B" earlier document but published on or after the international filing date<br>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)<br>"O" document referring to an oral disclosure, use, exhibition or other means<br>"P" document published prior to the international filing date but later than the priority date claimed<br>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention<br>"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone<br>"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art<br>"&" document member of the same patent family |   |   |
| Date of the actual completion of the international search   |   | Date of mailing of the international search report                    |
| 30 Sept 1997  |   | 02 -10- 1997  |
| Name and mailing address of the ISA/<br>Swedish Patent Office<br>Box 5055, S-102 42 STOCKHOLM<br>Facsimile No. +46 8 666 02 86  |   | Authorized officer<br>Rune Bengtsson<br>Telephone No. +46 8 782 25 00 |

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

01/09/97

International application No.

PCT/SE 97/00872

| Patent document<br>cited in search report |         |    | Publication<br>date | Patent family<br>member(s) |              | Publication<br>date |
|---|---------|----|---------------------|----------------------------|--------------|---------------------|
| US  | 5231494 | A  | 27/07/93            | EP                         | 0536628 A    | 14/04/93            |
| <hr/>                                     |         |    |                     |                            |              |                     |
| US  | 5319455 | A  | 07/06/94            | AU                         | 643828 B     | 25/11/93            |
|   |         |    |                     | AU                         | 8483891 A    | 02/04/92            |
|   |         |    |                     | CA                         | 2052477 A    | 29/03/92            |
|   |         |    |                     | CN                         | 1063593 A    | 12/08/92            |
|   |         |    |                     | CS                         | 9102869 A    | 13/05/92            |
|   |         |    |                     | EP                         | 0477786 A    | 01/04/92            |
|   |         |    |                     | JP                         | 6022315 A    | 28/01/94            |
|   |         |    |                     | NZ                         | 239969 A     | 22/12/94            |
|   |         |    |                     | PT                         | 99110 A      | 31/12/93            |
|   |         |    |                     | TR                         | 25669 A      | 01/07/93            |
|   |         |    |                     | US                         | 5093718 A    | 03/03/92            |
|   |         |    |                     | US                         | 5220420 A    | 15/06/93            |
|   |         |    |                     | US                         | 5361091 A    | 01/11/94            |
|   |         |    |                     | US                         | 5412720 A    | 02/05/95            |
|   |         |    |                     | US                         | 5442700 A    | 15/08/95            |
|   |         |    |                     | US                         | 5485197 A    | 16/01/96            |
|   |         |    |                     | US                         | 5526034 A    | 11/06/96            |
|   |         |    |                     | US                         | 5550578 A    | 27/08/96            |
|   |         |    |                     | US                         | 5557316 A    | 17/09/96            |
|   |         |    |                     | US                         | 5587734 A    | 24/12/96            |
|   |         |    |                     | US                         | 5594507 A    | 14/01/97            |
| <hr/>                                     |         |    |                     |                            |              |                     |
| EP  | 0424648 | A2 | 02/05/91            | SE                         | 0424648 T3   |                     |
|   |         |    |                     | CA                         | 2024868 A    | 24/04/91            |
|   |         |    |                     | DE                         | 69027276 D,T | 23/01/97            |
|   |         |    |                     | US                         | 5155591 A    | 13/10/92            |
| <hr/>                                     |         |    |                     |                            |              |                     |